

PERSISTENT PAIN IN OLDER ADULTS: A BRIEF OVERVIEW.

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Abstract

Persistent pain in older adult has become an important area of research and clinical practice. The prevalence of persistent pain in older adults ranges from as much as 50-80%. Though some patients and health care professionals believe that pain is a by-product of ageing, this is a myth and a barrier to appropriate pain management. As we age, pain appears to decrease at certain bodily sites (e.g. chest pain) and increase at others (e.g. joint pain). This is likely due to a range of biological, psychological and social reasons. Arguably, older adults should be seen as a unique sub group of pain patients and simply applying findings from research on younger adults to older adults may be inappropriate. Based upon this premise, in 2002, The American Geriatric Society (AGS) published a set of guidelines for the management of older adults with persistent pain. These guidelines highlight the importance of physical activity, patient education and cognitive-behavioural therapies. The recommendations are broadly in line with current recommendations for persistent pain in adults of all ages. The AGS guidelines, whilst useful, have a number of limitations and there is a need for a more up to date, comprehensive, review of the literature to guide practice in this area. Ageist attitudes held by patients, health care professionals, and society in general are a considerable barrier to pain management of these patients. Understanding these attitudes is an important step towards overcoming these barriers in this commonly over looked pain population. The purpose of this review article is to provide a brief overview of some of the main issues in relation to the management of persistent pain in older adults.

Introduction

The prevalence of persistent pain in older adults is high and is set to rise over the coming years due to an ageing population in westernised countries. Thus, older adults with persistent pain are a growing clinical population. This is one of the reasons why the International Association for the Study of Pains (IASP) proclaimed 2007 as the global year against pain in older adults. In the past two decades research has begun to show that pain in older adults may be inherently different to pain in younger adults for a variety of biological, psychological and social reasons. Arguably, older adults should be seen as a unique sub

group of pain patients. It may be inappropriate to apply the same clinical interventions to older adults as for younger adults. Despite this, older adults are severely underrepresented in clinical trials (Alliance for ageing Research, 2003). Thus the IASP in their call for action on persistent pain in older adults have stated that investigations of pain management strategies for older adults should be made a research priority (Gibson, 2007).

There are a number of guidelines on the management of persistent pain in younger adults however there is only one guideline currently in existence for the management of persistent pain in older adults (AGS, 2002). These guidelines highlight the unique clinical problem presented by older adults with persistent pain. However, it is questionable how widely aware health care professionals are of these guidelines and there is no research as to how adherent health care professionals are to them.

Ageism can be defined as *"the practice of discrimination based upon a person's age and generally alludes to prejudice directed against the elderly"* (Nemmers, 2004). Ageist attitudes on behalf of the patient themselves (Lansbury, 2000) and health care professionals (Ory et al. 2003) may have a negative effect on the assessment and management of these patients. It has been shown that evidence based care in older adults can lead to significant improvements in healthcare outcomes (Hay et al. 2006). Though these negative attitudes may in some cases be "well intentioned" if they are reducing the likelihood that older adults receive evidence based care then this could have considerable negative implications. Understanding these ageist attitudes may be the first step towards the appropriate clinical management of this commonly over looked pain population.

Prevalence: The effects of age on pain

As much as 50% of older adults living in the community report persistent pain. This number increases to 80% in those living in nursing homes (Gibson, 2007). As the age distribution of the world's population shifts and the number of older adults increases the number of older adults with persistent pain is expected to increase over the coming 30 years. Despite this large and growing clinical population there is very little research investigating persistent pain management in older patients.

Prevalence changes in pain across the lifespan are difficult to measure due to the methodological differences across studies e.g. different classifications of pain duration and pain sites. For certain pain groups such as head, abdominal and chest pain, frequency of pain reports seem to reduce in older adults;

conversely joint pain appears to increase with age while there is conflicting evidence for the effect of age on back pain (Helme & Gibson, 1999). There are many potential reasons for these age related changes in pain prevalence. Increased prevalence of co-morbidities and pain associated diseases such as osteoarthritis and osteoporotic fractures may contribute to increased prevalence of pain in some situations for instance. (Helme & Gibson, 1999).

Reduced pain reporting in older adults may be an anomaly of societal factors. For example, prevalence in community dwelling older adults may be reduced as those with the poorest health may be in nursing homes. Alternatively methodological issues could explain the reduced pain prevalence in older adults. Those amongst the oldest and most infirm within the older adult population may be the least likely to respond to prevalence surveys and thus they may be underrepresented. Psychological issues such as misattribution and stoicism may also play a role (Helme & Gibson, 1999). Misattributions may partly explain reduced reporting. Older adults may believe that increased pain is a by-product of growing old and thus consider pain as normal rather than indicative of injury or disease (Davis et al. 2002).

Physiological changes in relation to nociception may also play a role in age related changes in pain reporting. Age appears to have differing effects on different pain pathways. For example older adults tend to have increased heat pain thresholds and decreased pressure pain thresholds (Lautenbacher et al. 2005; Chakour et al. 1996). Descending inhibition appears to be impaired in older adults (Washington et al. 2000; Edwards et al. 2003) and secondary mechanical hyperalgesia may be prolonged after injury compared to younger adults (Zheng et al. 2000). Studies so far have been predominantly based on experimental pain and the clinical importance of these differences between younger and older adults has yet to be fully understood. However, as a result of these changes to nociception with ageing, older persons may have slower resolution of pain once injury has been incurred (Gibson & Farrell, 2004).

The reasons why some pain conditions appear to increase in prevalence and some appear to decrease in prevalence is complex and likely explained by some combination of physical, psychological, and societal factors. Better understanding of these factors may help to direct the management of older adults with persistent pain.

The impact of persistent pain

The impact of persistent pain in older adults can be far reaching and is linked to increased levels of depression, anxiety, anger,

cognitive impairment, reduced physical activity, increased functional impairment, sleep impairment, social isolation and reduced quality of life (AGS, 2002; Gibson et al. 2007). Recent studies have also found that persistent pain may have a negative effect on falls in older adults. Levine et al. (2009) followed 749 older adults (>70 years of age) for three years. There were 1029 falls reported over the duration of the study. Those with two or more pain sites and those who reported the highest levels of pain and pain interference with daily activities had a ~50% increased risk of falling.

Perhaps even more alarming is the recent finding that persistent pain is associated with earlier mortality (Torrance et al. 2010; Jordan & Croft, 2010). In 1996, 6940 individuals were followed over a 10 year period (Torrance et al. 2010). Various pieces of health information, including persistent pain status, were collected for all participants at the beginning of the study. The average age of participants at the beginning of the study was 58 ± 16 yrs. Over the ten years 1557 participants (27%) had died. Those with persistent pain compare to no persistent pain were 32% more likely to die during the follow up period though this finding was no longer statistically significant once age, gender and socioeconomic factors were controlled for. However those with severe pain had a higher risk of dying during the follow up period than those with mild pain and this risk remained elevated (49% increased risk) after controlling for age, gender and socioeconomic factors. This suggests a dose response relationship between pain and mortality risk. Considering the significant impact that persistent pain can have on the morbidity and mortality of older adults it is important that it be assessed and managed appropriately.

The assessment of persistent pain

The assessment of older adults with persistent pain can be a complex and daunting task. It is beyond the scope of this article to provide a detailed step-by-step approach to pain assessment in older adults and readers are referred to Hadjistavropoulos et al. (2007) for an in-depth clinically practical review of this area. Instead this section will focus on the issue of pain assessment in older patients with cognitive impairment.

The most common methods of pain assessment in the clinic is simple single-item scales such as the pain visual analogue scale [VAS] (or numerical rating scale [NRS]) as they are quick and simple to complete and accompanied by good levels of validity and reliability (Von Korff et al. 2000). There is some evidence that these types of simple single-item scales are still useful in those with mild to moderate dementia (Chibnall & Tait, 2001).

However it may be worth supplementing these methods with alternative assessment methods as cognitive impairment increases. Hadjistavropoulos *et al.* (2007) suggest that as patients become more cognitively impaired self-reported methods of pain assessment become less useful as they require higher levels of mental processing whereas observational methods which rely on observing patient's pain behaviours (e.g. grimacing, guarded movement) may be less impacted as these behaviours are more automatic and thus likely to be preserved despite the cognitive impairment. There are a range of brief (10 items or less) instruments such as the Pain Assessment Tool in Confused Older Adults (PAT-COA) and the Pain Assessment in Advanced Dementia scale (PAINAD) which purport to measure pain using pain behaviours (Decker & Perry, 2003; Warden *et al.* 2003). As yet however, there are no observational measurement tools that have adequate levels of validity and reliability combined with the brevity and simplicity required to make the measure practical in the clinical setting (Hadjistavropoulos *et al.* 2007).

There is mounting evidence that those who are cognitively impaired do not receive adequate pain control (Gibson *et al.* 2007) and this may be partially explained by inadequate pain assessment in patients with dementia. In a cross sectional study by Morrison and Siu (2000) the pre and post-operative [3 days] pain reports and analgesic use was measured in a group of cognitively intact (n=59) and cognitively impaired (n=38) hip fracture patients. Within the cognitively intact group 44% reported severe to very severe pain pre operatively and 42% reported severe to very severe pain post operatively. Half the cognitively intact group received inadequate analgesic medication for their level of pain. Now, compare this to the cognitively impaired group who received only 1/3 the amount of analgesic medication received by their cognitively intact counterparts. This suggests that pain management in this group was completely inadequate and these patients were probably experiencing considerable pain and distress which could have been reduced through appropriate medication. When the issues of pain assessment in dementia are put into this context it is clear that this is an area which requires urgent research in order to guide clinical practice.

The management of persistent pain

As previously mentioned in 2002 the American Geriatric Society [AGS] issued a set of guidelines for the management of persistent pain in the older adults (AGS, 2002). The guidelines were based upon a systematic review of the literature as well as expert opinion and were aimed specifically at clinicians. The recommendations come under four

subheadings; physical activity, education, cognitive behavioural therapies and other modalities (e.g. heat and cold). The guidelines strongly recommend staying physically active and engaging in exercise programs. These exercise programs should be tailored to the individual and include exercises targeted towards flexibility, strength and endurance. The guidelines also strongly recommend patient education and encouraging self-help strategies. Finally Cognitive-behavioural therapies are strongly advocated with an emphasis on coping strategies (AGS, 2002). The recommendations made by the AGS for older adults are broadly in line with current guidelines for persistent low back pain (for all adult ages) which recommend remaining at work, staying active, taking exercise, and avoiding bed rest (Airaksinen *et al.* 2006; NICE, 2009). This adds confidence to the specific recommendations made for older adults by the AGS (AGS, 2000). However, there are a number of limitations to these guidelines.

Firstly, the AGS guidelines are now nine years old and research may have since been published supporting or refuting some of the recommendations within. Arguably, the best example of this is that the pharmacological section of the guidelines recommended the non-opioid Rofecoxib(TM), among many other medications, for pain control. However, this drug was removed from the market by the manufacturers in 2004 due to evidence suggesting increased risks of cardiovascular complications.

Over the past decade a number of research trials will have been published which could alter the content of these recommendations. In terms of the non-pharmacological recommendations there does not seem to be a specific recommendation about bed rest. Current guidelines for adults of all ages with persistent pain strongly recommend against bed rest (Airaksinen *et al.* 2006; NICE, 2009). Restricted activity of older adults, (defined as bed rest for at least half a day or having to reduce one's usual activities) is associated with functional decline and increased health care utilisation (Gill *et al.* 2001; Gill *et al.* 2003; Reid *et al.* 2005). Though these studies are observational in nature, when combined with RCTs from younger adults with pain conditions a compelling case could be made for recommending the avoidance of bed rest in older adults with persistent pain.

A second limitation to these guidelines is that they do not clearly link their recommendations with the source publications. It is not obvious in which cases the evidence is directly from older adults with persistent pain and in which cases the evidence has been extrapolated from healthy older adults, or from younger adults with persistent pain. The recommendations do attempt to grade their recommendations in terms of strong recommendations and weak

recommendations but without a direct link to the source publications upon which the recommendation is made it is difficult to make a judgement on the quality of the literature supporting any one recommendation.

The quality and strength of evidence criteria used by the AGS are old and arguably somewhat lenient. For example, Level 1 quality of evidence grading can be given to a recommendation supported by at least one properly randomised controlled trial and all *level 1* recommendations have been given an *A* grading for strength of evidence which means that “the clinician should do this all the time”. This is in stark contrast to the current recommendations by the Cochrane Back Research Group (CBRG) considered the gold standard methodology for systematic reviews in back pain (Furlan et al. 2009). For an individual study to be considered to have a low risk of bias it needs to score 6 out of 12 on a checklist which assesses methodological quality. Then for a recommendation to be considered to be supported by high quality evidence the following criteria need to be met “at least 75% of the RCTs with no limitations of study design have consistent findings, direct and precise data and no known or suspected publication bias” (Furlan et al. 2009). Based upon the AGSs’ system many of their recommendations are *IA* graded recommendations (strongest recommendations possible). It is unlikely that these recommendations would receive such strong grading under current Cochrane methodologies.

Despite its limitations the AGS does provide an excellent starting point to guide the clinician in the management of older adults with persistent pain. The British Geriatric Society are due to publish an updated set of guidelines later this year. It is hoped that these new guidelines will overcome some of the limitations of the AGS guidelines discussed above.

Barriers to the management of persistent pain

There are many barriers to pain management for older adults. Many of the barriers are associated with the patient themselves, whilst other barriers are created by ageist attitudes of health care professionals, health care structures and society at large.

In 2000, Lansbury published a comprehensive qualitative study of older adults with persistent pain ($n=72$) and their perceived barriers to pain management. It involved six focus groups ranging in size from 6-30 persistent pain participants aged ≥ 65 years of age. 12 in-depth individual semi-structured interviews followed the focus groups. The following barriers were

identified; a wish not to bother anyone, financial cost, access to health care, side effects of medications, lack of information, Elderly persons’ attitudes to their pain, attitudes of health professionals as perceived by elderly people, attitudes of others as perceived by the elderly, fear of loss of control and independence, previous unpleasant experiences and ineffective treatment, dislike and distrust of diagnostic tests, acceptance of pain being due to old age. The latter barrier “acceptance of pain being due to old age” is a key issue. Societal views that pain is simply a by-product of ageing may be a significant barrier to pain management in older adults. Older adults who hold this belief may be less likely to complain or seek intervention for their pain (Pawlick & Middaugh, 2000). The findings of Lansbury (2000) have been corroborated in similar qualitative research by Davis et al. (2002) who reported that some older adults expected to have pain exemplified by the following quote “*I think that pain comes from old age*”. It is vital that health care professionals are aware of these barriers perceived by older adults so that they can discuss these issues with their patients. By doing this barriers such as perceived loss of control and perceived attitudes of health care professionals might be overcome.

Arguably health care professionals themselves are a considerable barrier to pain management in older adults. In an elegant study by Kee et al. (1998) eight patient vignettes were composed based upon eight real older adult persistent pain patients (≥ 62 years of age) who had made a good recovery from a multidisciplinary pain management program. The vignettes were then adapted so that there was an older adult version (with the patients real age mean age 69years) and a younger adult version (mean age 47years). Apart from age the vignettes were identical. The vignettes were posted to health care professionals working in pain management programmes in North America. Health care professionals were asked to rate the likelihood they would accept the patient on their pain management programme and the likelihood of a favourable outcome if they did come on the programme. Based upon the Health care professional’s ratings, older adults were 15% less likely to be admitted to the programme and 13% less likely to have a favourable outcome. These ageist attitudes are contrary to research showing that older adults can benefit from pain management programs to a similar extent to younger adults (Darchuk et al. 2010; Middaugh & Pawlick, 2000; Helme et al. 1996) These findings clearly indicate negative attitudes of health care professionals in the management of older adults with persistent low back pain.

As discussed in the previous section, physical activity is the cornerstone of non-pharmacological management of older adults with persistent pain. However negative attitudes, even

if they are well intentioned, towards ageing held by some health professionals that older adults “deserve a rest” may predispose them to avoid recommending physical activity (Ory et al. 2003). This could have considerable negative implications in the management of older adults with persistent pain.

These negative attitudes towards ageing are evident in an array of health care areas not just persistent pain. A study of 280 patients with unstable angina found that older patients were less likely to receive evidence based interventions simply due to their age rather than whether or not they were suitable candidates (Giugliano et al. 1998). Similarly, older patients in ITU are less likely to receive more aggressive interventions than younger patients despite guidelines suggesting that age should not be a deciding factor in such issues within the ICU (Alliance for ageing Research, 2003).

Conclusion

Persistent pain is common in older adults and is likely to increase due to the ageing population. Simply applying pain management strategies from younger adults to older adults may not be appropriate and there are a number of issues which make older adults a unique pain sub group that require tailored intervention. Whilst management guidelines do exist for patients with older adults they are now almost 10 years old and of questionable quality due to the lack of primary research in the area. There is no information on how aware health care professionals are of these guidelines or how rigorously they are applied. Ageist beliefs among older adults and health care workers are considerable barriers to pain management in this clinical group. Becoming aware of these barriers through appropriate education may be the first step to overcoming them and moving towards better clinical management of persistent pain in older adults.

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NEUROPHYSIOLOGICAL MODEL FOR PAIN

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The following is a response to the article reviews and opinion by Peter Roach in the Winter 2010 edition of The Journal of The Physiotherapy Pain Association. Peter Roach's words resonated with my colleagues and I within the area of pain management, who have for a long time been applying the neurophysiological (NP) model to our reasoning and management of patients with chronic pain.

The neurophysiological model of pain relates to the use of neurophysiological concepts taken from neuroscience research and theory. It is inclusive of biological, psychological and social aspects of the wider pain experience. This is in contrast to the traditional biomedical model which narrowly focuses predominantly upon tissue injury and pathology as the source of pain generation and maintenance.

Applying working models to our day-to-day assessment and management of patients' which incorporate the evidence base in addition to tacit knowledge, has always been part of our history as physiotherapists. Some of these models include, The Bobath approach (IBITA), the kinetic control model (kinetic control) and Maitland (IMTA). All of which are assessment and treatment strategies based around a comparatively narrow central theme of neurological injury, movement control dysfunction and joint based assessment with a view to mobilisation and manipulation. It must be acknowledged that neurophysiological concepts of pain have now been embraced by these models, yet it seems it is more of an afterthought rather than an integral or dominant part of the reasoning process. For this reason I would like to propose that as neuromusculoskeletal physiotherapists concerned with the treatment of pain and the reduction of the disability it causes, the dominant model applied to our assessment and management of pain should be the NP model. It should added at this point that this is not taking a reductionist approach to pain and swapping one biomedical model for another but is looking at an understanding of pain though which neurophysiological processes can perhaps be seen as a bridge between the biological and the psychosocial.

Pain is a multifactorial experience, involving peripheral, central and cortical processes in its interpretation, including functions such as emotion and memory. All of these elements are encompassed under an umbrella of neurophysiological